

What is claimed is:

- 1    1.     A semiconductor processing module comprising:  
2           a housing adapted to enclose a semiconductor wafer;  
3           an ultraviolet radiation source disposed within the housing; and  
4           a treatment medium disposed within the housing.
- 1    2.     The module of claim 1, wherein the ultraviolet radiation source comprises an  
2    ultraviolet lamp.
- 1    3.     The module of claim 1, wherein the treatment medium comprises ambient air.
- 1    4.     The module of claim 1, wherein the treatment medium comprises oxygen.
- 1    5.     The module of claim 1, wherein the treatment medium comprises ozone.
- 1    6.     The module of claim 1, further comprising a medium supply system disposed within  
2    the housing.
- 1    7.     The module of claim 6, wherein the medium supply system comprises a gas inlet.
- 1    8.     The module of claim 6, wherein the medium supply system comprises an ozone  
2    generator.

1     9.     The module of claim 1, further comprising a medium conditioning system disposed  
2     within the housing.

1     10.    The module of claim 9, further comprising a medium supply system disposed within  
2     the medium conditioning system.

1     11.    The module of claim 9, wherein the medium conditioning system is adapted to induce  
2     a partial vacuum within the housing.

1     12.    The module of claim 9, wherein the treatment medium is a vacuum induced by the  
2     medium conditioning system.

1     13.    The module of claim 9, wherein the medium conditioning system comprises a  
2     filtration system.

1     14.    A method of removing contaminants from a semiconductor substrate, comprising the  
2     steps of:

- 3         providing a housing adapted to enclose a semiconductor substrate;
- 4         providing an ultraviolet radiation source disposed within the housing;
- 5         providing a treatment medium disposed within the housing;
- 6         enclosing a semiconductor substrate within the housing;
- 7         exposing the semiconductor substrate to the treatment medium; and

8           utilizing the ultraviolet radiation source to expose the semiconductor substrate to  
9 ultraviolet radiation.

1    15.    The method of claim 14, wherein the step of providing an ultraviolet radiation source  
2 further comprises providing an ultraviolet lamp.

1    16.    The method of claim 14, wherein the step of providing a treatment medium further  
2 comprises providing ambient air.

1    17.    The method of claim 16, wherein the step of providing a treatment medium further  
2 comprises providing ambient air in a partial vacuum.

1    18.    The method of claim 14, wherein the step of providing a treatment medium further  
2 comprises providing a vacuum.

1    19.    The method of claim 14, wherein the step of providing a treatment medium further  
2 comprises providing a treatment medium comprising mostly oxygen.

1    20.    The method of claim 19, wherein the step of providing a treatment medium further  
2 comprises providing a treatment medium comprising mostly oxygen in a partial vacuum.

1    21.    The method of claim 14, wherein the step of providing a treatment medium further  
2 comprises providing a treatment medium comprising ozone.

1    22.    The method of claim 21, wherein the step of providing a treatment medium  
2 comprising ozone further comprises providing an ozone generator to supply ozone within the  
3 housing.

1    23.    The method of claim 21, wherein the step of providing a treatment medium further  
2    comprises providing a treatment medium comprising ozone in a partial vacuum.

1    24.    The method of claim 14, further comprising the step of growing a layer of oxide on  
2    the surface of the substrate.

1    25.    The method of claim 24, wherein the step of growing a layer of oxide further  
2    comprises controlling oxide growth by adjusting time and intensity of the ultraviolet  
3    radiation exposure.

1    26.    The method of claim 24, wherein the step of growing a layer of oxide further  
2    comprises controlling oxide growth by adjusting composition of the treatment medium.

1    27.    A system for remediating organic contaminants from a copper seed layer deposited on  
2    an upper surface of a semiconductor wafer, the system comprising:

3            a housing adapted to receive and enclose the semiconductor wafer;

4            an ultraviolet radiation source disposed within the housing and adapted to expose the  
5    semiconductor wafer to ultraviolet radiation;

6            an ozone generator adapted to supply ozone into the housing as a treatment medium  
7    for the semiconductor wafer; and

8            a conditioning system disposed within the housing and adapted to filter contaminants  
9    from the ozone.